4. REGIONAL ANALYSIS OF MARYLAND'S HEALTH CARE MARKET PLACE

The health care market place in Maryland is characterized by substantial regional variation. The purpose of the first part of this chapter is to highlight these regional differences across the state, focusing on demographics, health care coverage and economic indicators, health status, and resource availability. This information provides a context for understanding the regional variation in calendar year 1998 health care expenditures presented in the second half of the chapter. The discussion of regional expenditures explores two basic issues:

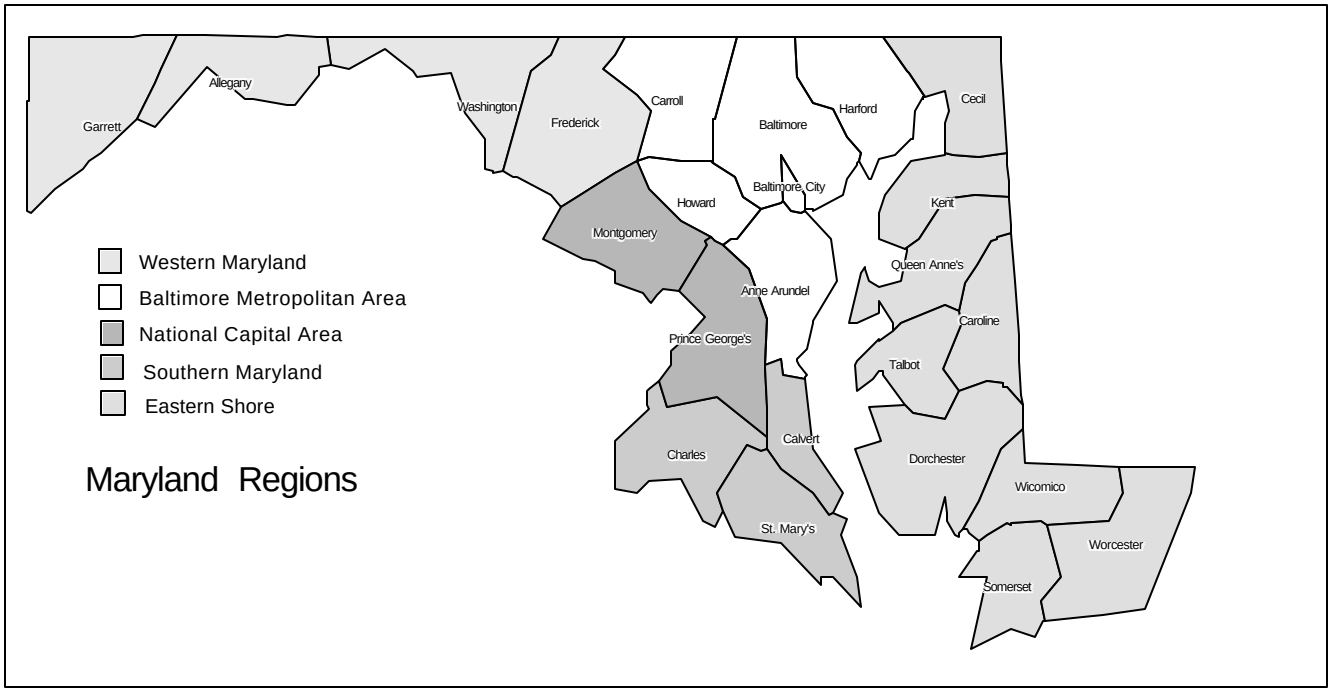
- The extent to which expenditures vary across regions within the state.
- How the distribution of expenditures by source of payment and by type of service vary by region.

This section builds upon ideas discussed in Chapter 3, which provides a detailed discussion of the distribution of expenditures at the state level, some of which will be mirrored here at the regional level. Chapter 3 also discusses the data sources and allocation methods used in generating the tables and provides some caveats that should be read to avoid over-interpreting the data.

The discussion in this chapter starts with a description of the regions used for the analysis and a presentation of some basic information on these regions. This information includes demographics, insurance coverage and economic indicators, health status indicators, and health care resources available in the region. This is followed by a discussion of the health expenditures by region. The format of the discussion of each region follows the general format used for the state in Chapter 3.

DEFINING THE REGIONS WITHIN MARYLAND

Geographic variation within Maryland – the pattern and level of health care spending and the factors which influence health care utilization – is best understood by segmenting the state into regions that share a common health care infrastructure, as well as similar demographics, economic indicators, medical care costs, and utilization patterns. With this goal in mind, Maryland was divided into five regions of analysis, as shown in the map below. This regional classification conforms to that used by the Maryland Vital Statistics Administration.



REGIONAL VARIATION IN FACTORS THAT INFLUENCE HEALTH CARE UTILIZATION

The volume of spending for health services in a region results from choices made in that region's health care market place. Demand, supply, and service prices – which lie behind the observed choices – can vary from region to region, resulting in regional differences in what is purchased and how much is spent. **This section of the chapter presents selected measures for most of the factors that influence health care service demand and supply: population demographics, health status and life style, health care coverage and economic factors, and resource availability.** (See Chapter 2 for a discussion of how these factors influence health care utilization.) Health service prices differ by payer with the usual variation being that Medicaid pays the least for a specified service, Medicare pays the most, and private payers generally pay somewhat less than Medicare for the same service. Health service prices can also exhibit within payer regional variation, but because there is no simple way to characterize regional differences in service prices a description of this regional variation in service prices is not presented here.[1] Table 4-1 presents regional information on those variables in Table 2-1 (Chapter 2) for which data was available at the county level, excluding physician supply. Information on physician supply is included in Table 4-2, which specifies the availability of particular categories of specialty-care physicians in addition to the supply of primary care physicians. The details presented in both of these tables are addressed by region in the sub-sections that follow.

The comparative information in Tables 4-1 and 4-2 brings to light the regional variation that exists in the factors that drive health care utilization. Age distributions and racial composition, which tend to shape health care needs and preferences, differ significantly by region. For instance, the proportion of minorities ranges from 31 percent in the Baltimore Metropolitan Area to 7 percent in Western Maryland. The Eastern Shore is home to the state's oldest population, while Southern Maryland is home to the youngest. Regional diversity also exists in the availability of treatment resources, which influences what services are utilized. The supply of hospital beds and physicians ranges from 133 beds and 104 physicians per 100,000 population in Southern Maryland to 326 beds and 356 physicians per 100,000 residents in the Baltimore Metropolitan Area.

Economic well-being and health insurance coverage, both of which are positively correlated with greater health care utilization, demonstrate considerable – and complex – regional variation. For example, the National Capital Area had the highest per capita income in the state in 1997, $33,654, and the lowest unemployment in 1998 at 3 percent. The worst per capita income and unemployment, respectively, belonged to Western Maryland, with $22,808, and the Eastern Shore with 6.6 percent unemployment rate. The regional uninsured rates range from 10.3 to 16.0 percent; the Eastern Shore had the highest rate but Southern Maryland, not the National Capital Area, had the lowest rate. Two other aspects of insurance coverage: the type of payer and the delivery system, are also important factors in health care utilization and spending. Insurers differ in their coverage packages (discussed in Chapter 2) – influencing what services are used – and in the prices they pay for services, both of which affect the level of expenditures. So the proportion of the population served by each of the major payer categories has implications for regional health care expenditures. Enrollment in public insurance programs is positively related to higher per capita expenditures because of greater health care needs and higher service prices in Medicare and the broader benefit package in Medicaid.[2] Medicare enrollment ranges from 16.0 percent of the residents on the Eastern Maryland to just 8.7 percent in Southern Maryland; Medicaid enrollment is highest in the Baltimore Metropolitan Area at 10.1 percent of residents, and lowest in the National Capital Area at 6.1 percent. Variation in the HMO market share of a payer's enrollees also affects spending since HMOs are generally associated with lower per capita expenditures than fee-for-service for a given population.

[1] In Maryland prices for most services (excluding hospital services, which are set by the state's regulatory system), the state's private payers tend to negotiate service prices and the public payers set service prices. Medicaid has one price schedule for the state, but Medicare pays slightly lower prices in the state's rural regions. Private payers can negotiate lower prices in areas where they have significant numbers of enrollees and there are lots of competing health care providers, making it difficult to identify and characterize regional price trends in the private market.

[2] Full Medicaid benefits require no co-payments and include coverage for prescription drugs, extended nursing home care, and a variety of mental health services not covered by other payers.

WESTERN MARYLAND

Demographics: Western Maryland comprises 8 percent of the state's population. The most populous county in the region is Frederick, where 45 percent of the residents live, and the least populous is Garrett, with 7 percent of the region's residents. The percentage of residents between the ages of 18 and 44 in the area is below the state average, and this is balanced by a percentage of aged (65 and older) higher than average. The residents of Allegany County, in particular, are among the oldest in the state. There are fewer minorities in this region than anywhere else in Maryland, and 92.8 percent of the population is white. The population of Garrett County, in particular, is less than 1 percent minority, in contrast to the state average of 32.1 percent.

Health Care Coverage & Economic Indicators: Western Maryland had the lowest per capita income of all regions in 1997, $22,808, 20 percent lower than the state average. Per capita incomes ranged from $17,396 in Garrett County to $26,270 in the more prosperous Frederick County. The unemployment rate for the region was 4.8 percent, higher than the 4.6 percent reported for the state as a whole. The highest unemployment rate in the state was reported by Garrett County, at 11.1 percent. Frederick County's rate, however, was much lower than the state average, at 2.9 percent. As of July 1998, Medicare enrollment for the population of Western Maryland was the second highest of all regions at 14.1 percent, above the state average of 12.2 percent. As expected from the age distributions, most of the Medicare enrollees reside in Allegany County, and the fewest live in Frederick County. Medicaid enrollment for the region was below average at 7.8 percent, although enrollment ranged from 4.6 percent in Frederick County to 14.6 percent in Garrett County.

Health Status: Only 7.5 percent of statewide births occurred to residents of Western Maryland in 1998. Approximately half of these births occurred in Frederick County, and another 29 percent occurred in Washington County, the two most populous jurisdictions in the region. The percentage of low birth weight babies in this region, 6.7 percent, was the lowest in the state. Eighty-eight percent of all women in the region received prenatal care in the first trimester, the highest proportion in the state, and infant mortality was the lowest among all regions. Regarding total mortality as reported in 1997, most residents of Western Maryland, 32.7 percent, died from heart disease, and deaths from strokes were the next most likely cause at 7.6 percent. The proportion of deaths within the region from heart disease and strokes exceeded comparable percentages in other regions and in the state overall. The region's rate of death from stroke is the highest in the state, primarily due to mortality in Garrett and Allegany Counties. Allegany leads the state in deaths from heart disease and chronic pulmonary disease. Nevertheless, the death rates for all causes listed, with the exception of stroke, decreased from 1997. The lowest homicide rate in the state occurred in Western Maryland. Additionally, new AIDS cases reported in 1998 in Western Maryland was the second lowest rate among all regions at 4 per 100,000 residents.

Resources Available: Western Maryland has the greatest supply of nursing home beds in the state as well as the highest proportion of elderly residents. Additionally, the region has the second highest supply of acute hospital beds in Maryland. In both 1996 and 1997, Western Maryland had about half the state average in every physician specialty category. The number of primary physicians increased in 1997, as did the number of physicians in obstetrics/gynecology, surgery, internal medicine/pediatric specialties, and anesthesiology. There was little or no change in the remaining physician specialty categories. Notable increases occurred in: Allegany County (obstetrics/gynecology), Frederick County (primary care), Garrett County (surgery, internal medicine/pediatric specialties), and Washington County (total number of physicians).

BALTIMORE METROPOLITAN AREA

Demographics: The Baltimore Metropolitan Area is the most populous region of the state and includes 47.6 percent of the state's residents. The distribution of this region's population ranges from 6.1 percent in Carroll County to 29.5 percent in Baltimore City. The age distribution of residents resembles that of the state; with about 25 percent under the age of 18 and about 12 percent age 65 or over. The majority of residents, 41.3 percent, are between the ages of 18 and 44. Howard County is characterized by the youngest population, and Baltimore County is characterized by the oldest. As a whole, the Baltimore Metropolitan Area has the second highest percentage of minority residents in the state, 30.9 percent, but the distribution is not even across the counties. Specifically, Carroll County's population is 4.1 percent minority, while minorities comprise 68.3 percent of the Baltimore City population.

TABLE 4-1: HEALTH-RELATED DATA FOR MARYLAND REGIONAL SUBDIVISIONS

	Ref. No.*	WESTERN MD	BALTIMORE METRO AREA	NATIONAL CAPITAL	SOUTHERN MD	EASTERN SHORE	MARYLAND TOTAL
DEMOGRAPHICS							
Total Population, 1998	1	414,700	2,444,280	1,618,690	277,510	379,628	5,134,808
Population Distribution, 1998:	1						
Under Age 18 Population (as % of total)		25.3%	24.8%	24.6%	29.7%	24.8%	25.1%
18-44 Population (as % of total)		39.9%	41.3%	44.4%	42.0%	38.0%	42.0%
45-64 Population (as % of total)		21.8%	21.6%	21.1%	19.9%	22.5%	21.4%
65 & older Population (as % of total)		12.9%	12.2%	9.9%	8.4%	14.6%	11.5%
Minority Population (as % of total)		7.2%	30.9%	43.9%	22.9%	23.6%	32.1%
HEALTH STATUS							
Total Births, 1998	5	5,418	33,672	24,389	3,846	4,477	71,802
Low birth weight babies (% of births)		6.7%	9.3%	8.7%	7.0%	7.9%	8.7%
Late or no prenatal care (% of births)		11.7%	12.2%	11.9%	12.5%	13.1%	12.1%
Infant mortality rate per 1,000 live births		5.2	8.3	10.0	9.6	7.6	8.6
AIDS cases reported per 100,000 pop., 1998	8	4	30	15	8	11	22
Heart disease deaths per 100,000 pop., 1997	22	287	261	172	174	316	235
Malignant neoplasm deaths per 100,000 pop., 1997	22	202	223	155	151	256	198
Cerebrovascular disease (stroke) deaths per 100,000 pop., 1997	22	66	55	42	37	59	51
Chronic pulmonary disease deaths per 100,000 pop., 1997	22	48	40	22	31	59	36
Pneumonia & influenza deaths per 100,000 pop., 1997	22	30	32	24	17	34	29
Diabetes deaths per 100,000 pop., 1997	22	30	30	20	23	38	27
Accidents and adverse effects deaths per 100,000 pop., 1997	22	29	27	22	31	38	27
Septicemia deaths per 100,000 pop., 1997	22	9	16	11	6	14	13
Homicide deaths per 100,000 pop., 1997	22	1.0	14.5	10.3	3.3	5.0	10.8
HEALTH CARE COVERAGE AND ECONOMIC INDICATORS							
Medicare Enrollment (% of pop.), 1998	23	14.1%	13.4%	9.7%	8.7%	16.0%	12.2%
Medicaid Enrollment (% of pop.), 1998	24	7.8%	10.1%	6.1%	6.6%	9.2%	8.4%
Per Capita Income, 1997	14	$22,808	$27,790	$33,654	$24,094	$22,913	$28,674
Unemployment Rate (% of civilian labor force), 1998	13	4.8%	5.2%	3.3%	3.5%	6.6%	4.6%
Percent Uninsured, 1998	11	15.3%	13.6%	13.9%	10.3%	16.0%	13.8%
Percent with Private Coverage (excluding Medigap), 1998	11	62.7%	62.6%	69.0%	73.3%	58.9%	65.0%
RESOURCES AVAILABLE							
Nursing home beds available per 100,000 pop., 1998	25	877	630	461	462	797	600
Licensed acute care hospital beds per 100,000 pop., 1998	25	253	326	172	133	232	254

* References are in the Technical Notes Section in the Appendices

TABLE 4-2: PHYSICIANS IN PATIENT CARE BY SPECIALTY AND MARYLAND REGION PER 100,000 POPULATION, 1997

PHYSICIAN SPECIALTY	*WESTERN MD*	*BALTIMORE METRO AREA*	*NATIONAL CAPITAL*	*SOUTHERN MD*	*EASTERN SHORE*	*MARYLAND TOTAL*
Total Physicians	160	356	355	104	155	312
Primary Care	54	117	117	41	60	103
Obstetrics/Gynecology	11	25	22	9	11	21
Surgery	34	64	50	19	24	52
Internal Medicine & Pediatric Specialties	20	39	50	11	18	38
Anesthesiology	9	19	18	5	7	16
Pathology	3	9	10	2	3	8
Psychiatry	8	29	31	3	11	25
Radiology	7	17	15	3	7	14
Other*	14	37	41	9	13	33

* Includes Dermatology, Emergency Medicine, Neurology, and Physical Medicine.

Source: HCACC calculations based on U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, *Area Resource File: February 1997 Release.* NOTE: Table represents nonfederal physicians in patient care per 100,000 population based on (1) American Medical Association Physician Masterfiles, (2) American Osteopathic Association data, and (3) Bureau of the Census population estimates; all contained in the *Area Resource File.*

Health Care Coverage & Economic Indicators: In 1997, the per capita income for the Baltimore Metropolitan Area was the second highest of all regions at $27,790, ranging from $24,444 in Baltimore City to $33,127 in Howard County. The unemployment rate was the second highest in Maryland at 5.2 percent, 13 percent higher than the state rate. Unemployment was only 2.6 percent in Howard County, but the high rate in Baltimore City, 9 percent, inflated the regional percentage. Medicare enrollment in this region well exceeds the state average at 13.4 percent; however, the distribution of enrollees varies greatly by jurisdiction. For instance, the smallest proportion of enrollees resides in Howard County, and the largest proportions reside in Baltimore City and Baltimore County. Over half of all state Medicaid enrollees, 57 percent, are found in the Baltimore Metropolitan Area, and Medicaid enrollment for the region's population, at 10.1 percent, is the highest in Maryland. The smallest enrollment percentages are found in Howard and Carroll County, and the largest percentage exists in Baltimore City, the highest in the state.

Health Status: Because it is the most populous region in Maryland, the highest percentage of births, 46.9 percent, was recorded in the Baltimore Metropolitan Area in 1998. The proportion of births in the region varied from 5.7 percent in Carroll County to 28.6 percent in Baltimore City. The Baltimore Metropolitan Area was notable for the highest percentage of low birth weight babies in the state, 9.3 percent. The percentage of women receiving prenatal care in the first trimester, 87.8 percent, is virtually identical to the state average, and infant mortality in the area was 3.5 percent below the state average at 8.3 per 1,000 births. Baltimore City has the third highest rate of infant mortality in Maryland at 12.2. Compared to 1996, the mortality rates of all the top causes of death dropped in this area, with the exception of chronic pulmonary disease. However, the death rates for the top causes exceeded state averages for all causes except accidents. The highest homicide rate in Maryland, 42.6, occurred in Baltimore City, making the Baltimore Area's homicide rate highest among all regions at 14.5. Additionally, the number of new AIDS cases in 1998 reported in the Baltimore Metropolitan Area was the highest in the state at 30 cases per 100,000 residents. Most of these cases resided in Baltimore City, which had 91 new cases per 100,000 residents.

Resources Available: The Baltimore Metropolitan Area has the largest supply of acute hospital beds in the state, mostly concentrated in Baltimore City. The region is ranked third in its supply of nursing home beds. The Baltimore Metropolitan Area has the highest concentration of all physician types in Maryland. These high proportions are due to the dominating presence of physicians in Baltimore City, followed closely by Howard County. The total number of physicians in all counties in the region increased in 1997, with the exception of Baltimore County.

NATIONAL CAPITAL AREA

Demographics: The National Capital Area is the second most populous region in Maryland and comprises 31.5 percent of the state's population. The number of residents is almost equally divided between Montgomery and Prince George's Counties. This region has the smallest percentage of residents under the age of 18, somewhat below the state average for this age group, but the highest percentage of residents between the ages of 18 and 44. Only 9.9 percent of the residents are aged 65 or older, 13.9 percent below the statewide average. The proportion of elderly differs substantially in these counties, however, with Montgomery County being 11.7 percent elderly compared to 7.9 percent in Prince George's County. The percentage of minorities in this region, 43.9 percent, is about 37 percent greater than the state average; however, there are about twice as many minorities in Prince George's County relative to Montgomery County. Prince George's County is second only to Baltimore City in its percentage of minorities.

Health Care Coverage & Economic Indicators: The National Capital Area is the most prosperous region in the state, reporting the highest per capita income in 1997 at $33,654. Unemployment is also the lowest in this region at only 3.3 percent, well below the state rate of 4.6 percent. Montgomery County is notable for having the highest per capita income, $41,539, and the lowest unemployment rate, 2.3 percent, in Maryland. Although the rate of Medicare enrollment for the regional population was 9.7 percent, well below the state average, the National Capital Area was the residence of 25 percent of all Maryland Medicare enrollees as of July 1998, with the majority living in Montgomery County. Medicaid enrollment was the lowest of all regions, at only 6.1 percent. Most Medicaid enrollees resided in Prince George's County.

Health Status: Approximately 34 percent of all births in the state occurred in the National Capital Area in 1998, evenly divided between Montgomery and Prince George's Counties. The percent of babies with low birth weights equaled the state average at 8.7 percent, and the percentage of women receiving prenatal care in the first trimester was approximately the state average at 88.1 percent. The region's infant mortality rate, 10 per 1,000 births, was the highest in Maryland in 1998. Compared to 1996, the rates of death due to heart disease, chronic pulmonary disease, and accidents increased. In 1997, the death rates from the top causes were all lower than the state averages, with the death rates from heart disease; chronic pulmonary disease, diabetes, and accidents the lowest of any region. However, the percentages of all deaths attributable to accidents, and homicides were higher than the state averages, primarily due to Prince George's County. More of the deaths in this region were due to strokes relative to the rest of Maryland, primarily because of the rates in Montgomery County. The reported AIDS cases for the National Capital Area in 1998 was the second highest in the state at 15 per 100,000 residents.

Resources Available: The National Capital Area has the second lowest number of acute hospital beds in the state, even though the total number of physicians per 100,000 population for the region was virtually the same as the total number for the Baltimore Metropolitan Area in 1997. The number of physicians in all specialty categories either increased or remained the same between 1996 and 1997. The National Capital Area had the lowest number of nursing home beds in the state, mostly concentrated in Montgomery County.

SOUTHERN MARYLAND

Demographics: The smallest region in the state, Southern Maryland comprises only 5.4 percent of the total population. The largest county is Charles, with 42.5 percent of all of the region's residents, followed by St. Mary's and Calvert Counties. The region, as a whole, is the youngest in the state and is characterized by the highest percentage of residents under the age of 18, 29.7 percent. The percentage of residents aged 45 and over is 14 percent less than the state average. After Western Maryland, Southern Maryland has the smallest proportion of minorities, 29 percent below the state average.

Health Care Coverage & Economic Indicators: The per capita income for Southern Maryland in 1997, $24,094, was 16 percent below the state average. There was little variability among the counties on this measure. However, unemployment was much lower than the state as a whole at 3.5 percent. Southern Maryland was home to the smallest percentage of all Maryland Medicare enrollees in July 1998, only 8.7 percent of its population. Also, the second smallest percentage of all state Medicaid enrollees resided in Southern Maryland, only 6.6 percent.

Health Status: Southern Maryland reported the lowest proportion of births in the state in 1998, 5.4 percent, and the second lowest percentage of low birth weight babies, 7 percent. The proportion of women receiving prenatal care in the first trimester, 88.5 percent, was above the state average. Infant mortality was also above the state average at 9.6 per 1,000 births, the second highest in Maryland. Relative to 1996, the rates of death for heart disease, diabetes, and accidents increased. In the case of heart disease, the death rate rose by 7 percent. The region’s deaths rates for the top causes were below the state averages for all causes except accidents, and the death rates for cancer, stroke, pneumonia and influenza, and septicemia were the lowest in the state. The percentages of deaths attributable to diabetes and accidents were the highest among all regions. The number of new AIDS cases reported for Southern Maryland in 1998 was below average at 8 per 100,000 residents.

Resources Available: Southern Maryland is notable for having the lowest number of acute hospital beds per 100,000 residents in Maryland. As in previous years, Southern Maryland had the lowest per capita supply of physicians in 1997, although the total number grew by 18 percent from 1996. This increase was distributed among all three counties comprising the region. Unlike the state ratio of 3:1, Southern Maryland and the Eastern Shore have a smaller ratio of primary care physicians to specialists, 2.5:1. Southern Maryland has the second smallest supply of nursing home beds in the state.

EASTERN SHORE

Demographics: The Eastern Shore comprises 7.4 percent of the state's population. Cecil and Wicomico are the most populous counties in the region, and Kent is the smallest in both the region and Maryland. Residents of the Eastern Shore are the oldest in the state, with 37.1 percent of the population aged 45 and older, compared to a statewide average of 32.9 percent. Only 62.8 percent of the population is between the ages of 18 and 44, compared to the statewide percent of 67.1 percent. Cecil County is the youngest in the region, and Talbot County is the oldest. Only 23.6 percent of the residents on the Eastern Shore are minority, compared to 32.1 percent across Maryland. The distribution of minorities varies greatly, ranging from 6.7 percent in Cecil County to 47.4 percent in Somerset County.

Health Care Coverage & Economic Indicators: Per capita income on the Eastern Shore region was below the state average at $22,913 and ranged from $15,241 in Somerset County, the lowest in the state, to $33,123 in the more prosperous Talbot County. The unemployment rate in this region is the highest in Maryland at 6.6 percent, 43 percent higher than the state rate. There was great variation among the counties on this measure, with Worcester, Dorchester and Somerset Counties reporting rates greater than 9 percent, and Queen Anne's and Talbot Counties reporting rates under 4 percent. A substantial proportion of the residents on the Eastern Shore, 16 percent, were enrolled in Medicare. Most of these enrollees resided in Kent, Worcester, and Talbot Counties. The second highest rate of Medicaid enrollment in the state, 9.2 percent, occurred in this region as well. Most of these enrollees resided in Dorchester and Somerset Counties.

Health Status: The Eastern Shore was notable for the second lowest proportion of all state births in 1998, 6.2 percent. Most of these births occurred in Cecil and Wicomico Counties, the most populous areas. The percentage of babies with low birth weights was below the state average at 7.9 percent, but the percentage of women receiving prenatal care in the first trimester was lowest in the state at 86.9 percent. Infant mortality was the second lowest across the regions at 7.6 per 1,000 births; however, rates of individual counties varied greatly. Infant mortality ranged from 2.7 births per 1,000 live births in Cecil County, the lowest in the state, to 16.1 in Somerset County, the highest in the state. Deaths due to strokes, chronic pulmonary disease, and accidents increased relative to 1996. Most notably, the death rate for chronic pulmonary disease rose by 26 percent between 1996 and 1997. With the exception of homicide, the death rates for the Eastern Shore due to the top causes were above the state average, and excluding stroke, were the highest in the state. The percentage number of new AIDS cases reported for the Eastern Shore in 1998 was one-half the state average at 5.0 per 100,000 residents.

Resources Available: The per capita number of physicians on the Eastern Shore increased by 8 percent in 1997. The Eastern Shore follows a per capita distribution of physician specialists that is very similar to Western Maryland. Most of the physicians in this region are concentrated in Talbot and Wicomico Counties. Similarly, the supply of acute hospital beds on the Eastern Shore parallels that of Western Maryland. However, there are fewer nursing home beds on the Eastern Shore, which ranks second in the state in its supply. Most of the nursing home beds are found in the "older" counties, including Talbot, Dorchester, and Kent.

REGIONAL HEALTH CARE EXPENDITURES

If per capita expenditures were the same for every region, then a region's percentage of state population would exactly predict its share of state health care spending. **However, significant differences exist between the proportion of the population living in a region and the proportion of state health care expenditures spent on that population, as shown in Table 4-3.** In relative terms, the greatest difference between a region's shares of population and expenditures occurs in the National Capital Area, where the region's share of expenditures (29.3 percent) is 7.0 percent *smaller* than its 31.5 percent share of the state's population. The smallest relative difference between a region's shares of population and expenditures is the 3.7 percent gap that occurs in Western Maryland, with 8.1 and 7.8 percent, respectively, of the state's population and health expenditures. The Baltimore Metropolitan Area is the only region having a share of state spending greater than its share of the state's population. Baltimore's share of expenditures, 50.9 percent, *exceeds* its 47.6 percent share of population by a factor of 6.9 percent.

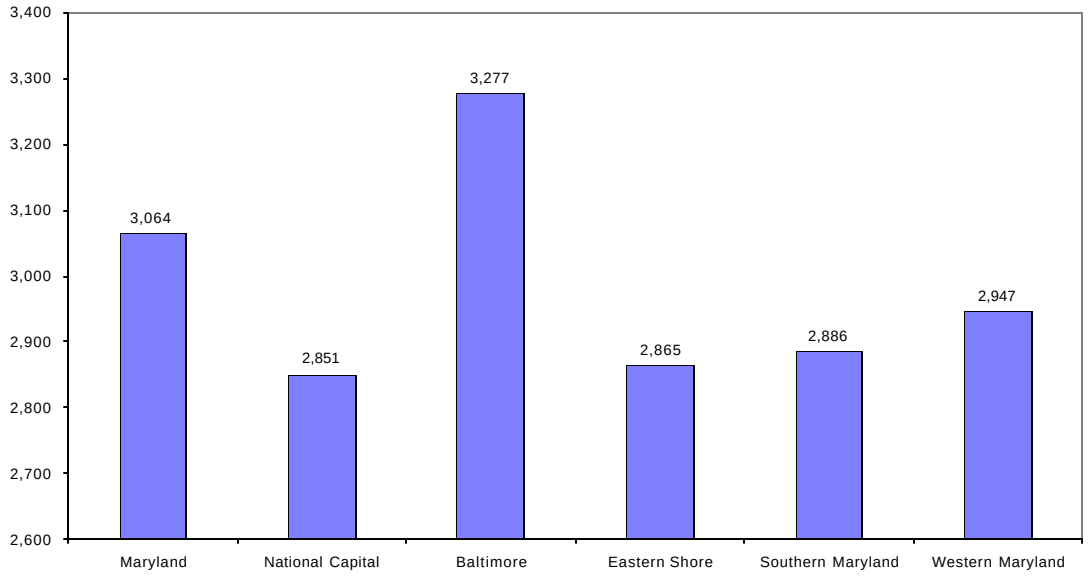
TABLE 4-3: REGIONAL DISTRIBUTION OF MARYLAND'S POPULATION AND EXPENDITURES 1998 (000s)

Region	1998		
	% of Population	Expenditures	% of Expenditures
Maryland	100.0%	$15,734,212	100.0%
National Capital	31.5	4,615,047	29.3
Baltimore	47.6	8,008,799	50.9
Eastern Shore	7.4	1,087,463	6.9
Southern MD	5.4	800,830	5.1
Western MD	8.1	1,222,073	7.8

NOTE: Regional expenditure estimates do not include administration or the net cost of insurance.

These differences between the regional population and spending distributions result from regional variations in per capita spending. As shown in Figure 4-1, Baltimore has the highest average per capita expenditures in the state, $3,277, which are 7 percent above the state average of $3,064.[3] All the remaining regions have per capita spending below the state average. The National Capital Area has the lowest average per capita expenditures of $2,851, 7 percent below the state average and 13 percent lower than Baltimore. The region with per capita spending closest to the state average is Western Maryland, whose $2,947 level is just 3.8 percent below the state average. Per capita expenditures in Southern Maryland and the Eastern Shore, shown in Figure 4-1, are 5.8 and 6.5 percent, respectively, below the state average.

Figure 4-1: Per Capita Expenditures by Region, 1998 ($)



NOTE: Regional expenditure estimates do not include administration or the net cost of insurance.

[3] Average regional per capita costs do not include administrative expenditures or the net cost of insurance. They measure spending for all residents in the region, regardless of insurance coverage. For that reason, they are not comparable to the per capita spending estimates reported in the previous section, which dealt specifically with the insured population.

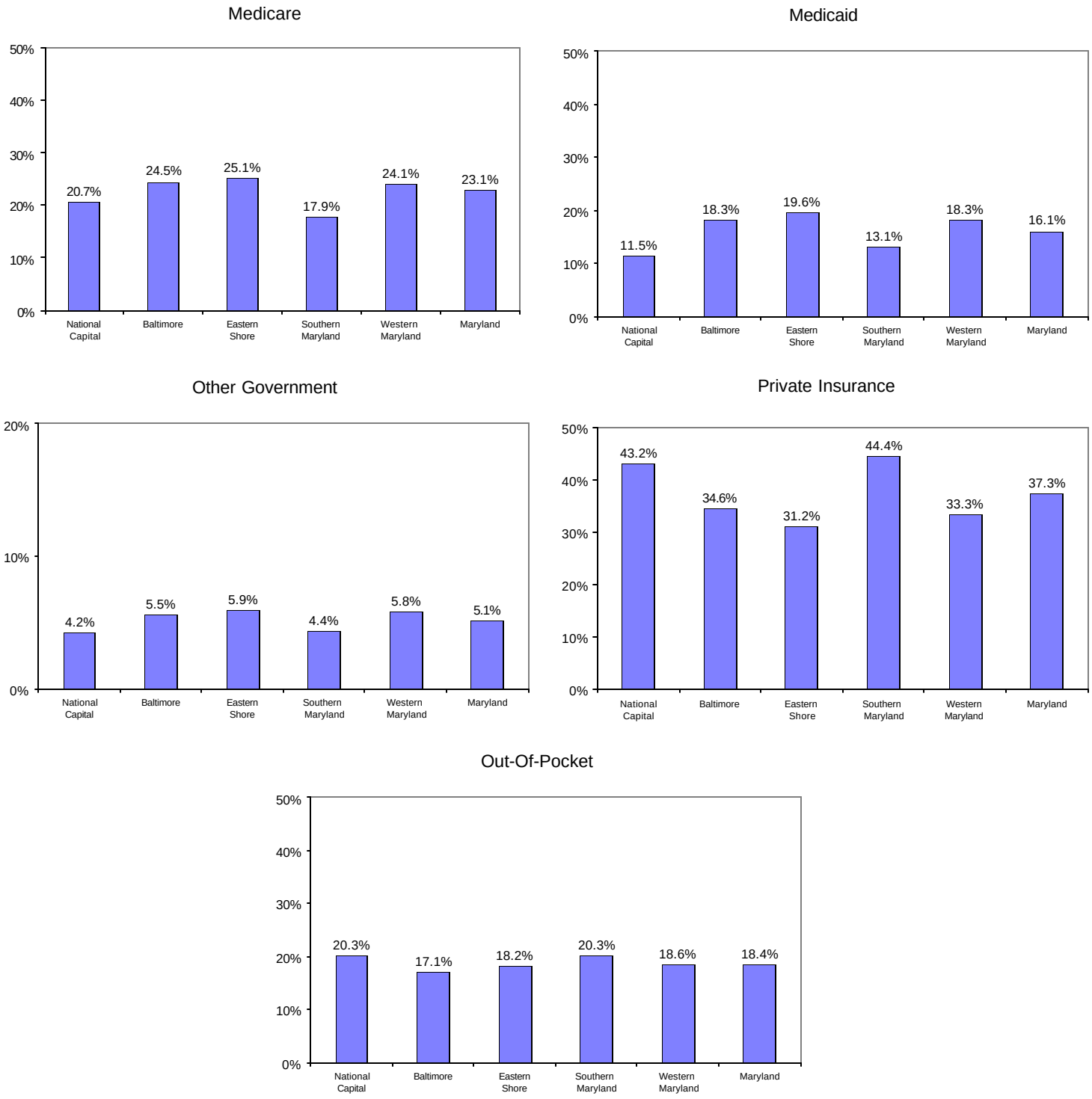
The magnitude of each region's per capita expenditures reflects both the volume and prices of the various health services purchased on behalf of the residents in that region. The types of services purchased and the prices paid for these services are heavily influenced by the mix of payers in each region - since payers vary in what services they cover and in what they reimburse providers for a particular service - and the supply of providers in the region, as discussed in the previous section. The remainder of this section illustrates regional differences in both the importance of the different payers in each region and in the allocation of spending among the different types of services.

Figure 4-2 presents payer contributions to the total payments in each region. Each chart presents a single payer's share of spending in each region. **Private payers – private insurance and out-of-pocket spending – paid for the majority of expenditures in all regions except the Eastern Shore, where they accounted for just under half, 49.4 percent, of the expenditures.** Private payers were most significant in Southern Maryland and the National Capita Area, covering 64.7 and 63.5 percent, respectively, of total expenditures in these regions. Although private payers covered the majority of expenditures in the Western Maryland and Baltimore regions, the private sector's share in these regions - slightly less than 52 percent - was below the statewide figure of 55.7 percent. The relative significance of private insurers within each region reflects the trend described for the entire private sector. The importance of out-of-pocket payments among the regions differs slightly from the pattern for private insurance, however. Direct payments by individuals are equally important in Southern Maryland and the National Capital Area at 20.3 percent of regional spending, and the out-of-pocket share of spending in Western Maryland, 18.6 percent, is slightly above the statewide figure of 18.4 percent.

Spending by all public payers – Medicare, Medicaid, and other government spending – ranged from a maximum of 50.6 percent of the health expenditures on the Eastern Shore to a minimum of 35.4 percent in Southern Maryland. Public spending covered slightly more than 48 percent of expenditures in Baltimore and Western Maryland - above the statewide figure of 44.3 percent - but just 36.4 percent of total spending in the National Capital Area. In relative terms, Medicare payments were most important on the Eastern Shore, where they amounted 25.1 percent of total health expenditures. Medicare payments were almost as significant in Baltimore and Western Maryland, regions in which Medicare covered a higher proportion of expenditures than the state average of 23.1 percent. Medicare was the least important source of payment in Southern Maryland, where it paid just 17.9 percent of that region's expenditures. Medicaid's importance as a payer was greatest on the Eastern Shore, where it covered 19.6 percent of the region's health care spending. It was nearly as significant a payer in Baltimore and Western Maryland where it covered 18.3 percent of these regions' expenditures. Medicaid payments were least important in the National Capital Area, where they amounted to just 11.5 percent of total expenditures.

The shares of each region's expenditures accounted for by the various payers result from a combination of: the percentages of the population covered by the different types of insurance (listed in Table 4-1); the magnitude of per capita spending of each of the payers; and the economic ability of the residents to make out-of-pocket expenditures for services, whether for co-payments and deductibles or for uninsured services. The fact that per capita spending by Medicare and Medicaid is higher than per capita spending under private insurance – cited in the preceding section and illustrated in Chapter 3 – is a major reason why an insurer's share of expenditures will not equate to the proportion of residents covered by the insurer. The relative significance of private insurance payments across the regions shown in Figure 4-2 does tend to reflect the level of private insurance coverage in those regions with the highest proportions of residents in private insurance. Southern Maryland and the National Capital Area (see Table 4-1) have the largest shares of expenditures covered by private insurance, and the Eastern Shore, the region with the smallest privately insured percentage, has the smallest share of expenditures covered by private insurance. The remaining two regions, Western Maryland and Baltimore, are below the state average in both the share of payments and residents covered by private insurance, but their rank order in payment shares is the reverse of their order in percent of population covered by private insurance. The private insurer payment share in each region is significantly smaller than the proportion of residents covered by private insurance, while the reverse is true of

Figure 4-2: Payer Contributions to Total Payments in Each Region



Medicare and Medicaid, reflecting the differences in per capita spending discussed above. As with private insurance, an across-region comparison of the proportion of population enrolled in Medicare (and in Medicaid) to the share of payments covered by that payer indicates a tendency for some correspondence, but the pattern exhibits some inconsistencies due to the influences discussed above.

Comparisons of a payer's shares of spending and population covered are also complicated by the fact that payer-specific per capita spending is not uniform across the regions. Average per capita expenditures made by private insurers are 19 percent higher in Baltimore ($1,808) than on the Eastern Shore ($1,517), for example. The average Medicare Program per capita expenditure is 26 percent lower on the Eastern Shore - which at $4,500, has the lowest Medicare per capita in the state - than in the National Capital Area, which has the highest ($6,047).[4] Such regional variations in per capita spending by a particular payer reflects different volumes and combinations of services and possibly different service prices, as cited earlier in this chapter. Regional differences in a payer's service mix result in part from regional differences in enrollees' health service needs (e.g., a higher percentage of Medicare and/or Medicaid enrollees with AIDS) and inclination to seek care (e.g., less affluent Medicare enrollees may be constrained from obtaining care by the required Medicare co-payments and deductibles). Other factors which contribute to regional differences in a payer's service mix - resulting in regional differences in the payer's per capita expenditures - include regional variation in the proportion of the insurer's population enrolled in HMOs and in the mix of available providers and their associated practice styles, as discussed earlier in this chapter and in Chapter 2.

Such regional variation in the mix and cost of services used by a specific population is illustrated in Table 4-4, which delineates the distribution of expenditures for privately insured indemnity (and other non-HMO) enrollees among nine different services categories for each of the five regions within Maryland. As in previous years, the proportions of expenditures allocated to hospital inpatient and physician services exhibit the most regional variation. Hospital inpatient expenditures represent 27.1 and 26.9 percent of total expenditures in Western Maryland and the Eastern Shore, respectively, but account for only 22.4 percent of expenditures in the National Capital Area.

TABLE 4-4: DISTRIBUTION OF HEALTH CARE EXPENDITURES BY REGION AND TYPE OF SERVICE ($000s): PRIVATE SECTOR / OTHER NON-HMO POPULATIONS, 1998

	National Capital		Baltimore		Eastern Shore		Southern Maryland		Western Maryland	
		% of Sum		% of Sum		% of Sum		% of Sum		% of Sum
Total Health Expenditures	$1.276.821	100%	$1.729.299	100%	$186.353	100%	$233.996	100.0%	$268.858	100%
Hospital Services										
Inpatient	285.700	22.4	461.887	26.7	50.105	26.9	61.509	26.3	72.876	27.1
Outpatient	165.731	13.0	211.255	12.2	28.618	15.4	26.110	11.2	34.931	13.0
Physician Services	486.121	38.1	604.362	34.9	63.636	34.1	82.400	35.2	91.406	34.0
Other Professional Services	89,409	7.0	99,620	5.8	8,689	4.7	17,604	7.5	15,611	5.8
Prescription Drugs	221.097	17.3	300.294	17.4	32.133	17.2	40.805	17.4	46.227	17.2
Nursing Home Care	3.051	0.2	4.132	0.2	445	0.2	559	0.2	642	0.2
Home Health Care	14.993	1.2	27.769	1.6	1.504	0.8	2.310	1.0	5.110	1.9
Other Services	10.719	0.8	19.980	1.2	1.222	0.7	2.699	1.2	2.054	0.8

NOTE: Regional expenditure estimates do not include administration or the net cost of insurance.

[4] Per capita expenditures by region by source of funds cannot be calculated because several expenditure components are not reported at the regional level. The differences in Medicare and private insurance per capita by region reported in this section are for payer expenditures only, and do not include out-of-pocket payments by the insured, as is the case with other per capita rates reported in this section.

Payer-specific regional variation in the allocation of expenditures to different services is also evident in the pattern of Medicaid spending for services provided outside of the HealthChoice Program, shown in Table 4-5. These expenditures are made on a fee-for-service basis. The share of expenditures allocated to inpatient care in this part of the Medicaid Program ranged from 27.8 percent in Baltimore to 15.2 percent in Western Maryland. The share of expenditures paid for nursing home services was highest on the Eastern Shore and in Western Maryland at 46 and 45 percent of expenditures, respectively. These regions have the highest percentages of elderly population (see Table 4-1).

TABLE 4-5: DISTRIBUTION OF HEALTH CARE EXPENDITURES BY REGION AND TYPE OF SERVICE: MEDICAID INDEMNITY AND OTHER NON-HMO POPULATIONS ($000s), 1998

	National Capital		Baltimore		Eastern Shore		Southern Maryland		Western Maryland	
		% of Sum		% of Sum		% of Sum		% of Sum		% of Sum
Total Health Expenditures	$362.439	100%	$998.261	100%	$145.638	100%	$71.358	100%	$152.563	100%
Hospital Services										
Inpatient	97.620	26.9	277.308	27.8	23.655	16.2	16.130	22.6	23.246	15.2
Outpatient	6.139	1.7	36.896	3.7	3.229	2.2	1.607	2.3	4.364	2.9
Physician Services	10.102	2.8	20.581	2.1	3.536	2.4	2.216	3.1	3.686	2.4
Other Professional Services	26,587	7.3	114,775	11.5	15,613	10.7	8,083	11.3	12,355	8.1
Prescription Drugs	30,844	8.5	87,518	8.8	12,942	8.9	6,180	8.7	14,654	9.6
Nursing Home Care	127.295	35.1	315.977	31.7	67.414	46.3	23.942	33.6	68.860	45.1
Home Health Care	60.253	16.6	136.155	13.6	17.864	12.3	12.395	17.4	24.458	16.0
Other Services	3.599	1.0	9.051	0.9	1.385	1.0	806	1.1	940	0.6

NOTE: Regional expenditure estimates do not include administration or the net cost of insurance.

CONCLUSIONS

Significant differences exist between each region's shares of the state population and state health care expenditures. The gap between population and expenditure shares results from regional differences in per capita expenditures. The highest per capita spending in 1998 occurs in Baltimore, which is 7 percent above the statewide average. The lowest per capita spending - 7 percent below the statewide average - exists in the National Capital Area. Among all regions, Western Maryland has a per capita expenditure closest to the 1998 statewide average and therefore exhibits the smallest relative difference between its population and expenditure shares.

Although regional variations in per capita expenditures result from regional differences in the underlying factors that drive health service use, the complex interplay of these influences - coupled with incomplete information - can make explicating the sources of the particular variation difficult. For some regions, the per capita spending level tends to correspond to existing measures of the underlying influences - population demographics, health care coverage and economic affluence, health status, and resource availability. The Baltimore region's above-average per capita spending can be associated with several underlying influences that are all above average among Baltimore residents. Per capita spending is generally highest among Medicare enrollees due to the greater health care needs of the elderly and permanently disabled enrollees and Medicare payment rates. Per capita spending for Medicaid enrollees is also generally higher than for the privately insured - in spite of low payment rates - due to a very broad service package, greater health care needs for some types of enrollees, and the absence of co-payments that can constrain utilization. Therefore, regions with above-average percentages of residents in these public programs, such as Baltimore,

would generally be expected to have per capita expenditures that are above average. The upward pressure on per capita spending in Baltimore exerted by its Medicare enrollment is expanded by the fact that Medicare payment rates in this urban region are somewhat higher than than those paid in the rural regions of the state. Although Medicaid payment rates are uniform across the state, the health status of Baltimore's Medicaid population, which includes more AIDS cases than any other region, could make the region's per capita spending for Medicaid enrollees above average as well, escalating the impact of the region's Medicaid enrollment percentage, the state's highest, on per capita spending. The level of per capita spending for Baltimore's privately insured residents, which is the highest among the regions, exerts an additional upward force on per capita spending in this region. These factors combined make it seem reasonable that per capita expenditures in the Baltimore region are above average.

The per capita expenditures for some regions, like the Eastern Shore, is more difficult to explain with just the information presented in this chapter. Per capita spending on the Eastern Shore is below the statewide average, and in fact, is the lowest of any region. However, many of the underlying influences would seem to imply above-average per capita spending for the region. These factors include a Medicare enrollment percentage that is highest among all regions coupled with a Medicaid enrollment percentage that is above average. The health status of the region's populace, as measured by death rates for the most causes of death, appears to be the worst in the state, which would also seem to imply a greater need for services in this region. In fact, the higher death rates may result in part from an under-utilization of health care services, which would lead to lower than expected per capita expenditures. Per capita spending by Medicare for its fee-for-service enrollees is lowest in this region, as is per capita spending by private insurers for non-HMO enrollees. These insurer-specific per capita payments seem to indicate much lower-than-expected service utilization, although lower service prices in this region may account for some of the gap in the insurer-specific per capita expenditures. The uninsured rate on the Eastern Shore, which is the highest of any region, also exerts a downward pressure on per capita spending in this region. Because the underlying influences in the region are exerting opposing forces of unspecified magnitude on per capita spending, it is difficult to determine if the outcome can be explained by the underlying influences presented in this chapter.

Similarly, there is no simple explanation for health care spending in Western Maryland. Per capita expenditures for Western Maryland are the second highest of all regions. The proportion of elderly residents in this area is above average, suggesting a high level of expenditures; yet, its Medicaid population is below the state average, suggesting a low level of expenditures. In reality, the below average per capita spending in this region is a result of a complex interaction among many factors including employment, insurance coverage, and wage rates. The situation is different for the National Capital Area and Southern Maryland. The National Capital Area is associated with the lowest per capita expenditures in the state. One underlying cause may be the relatively small proportion of this region's population that is covered by government insurance programs, and the high proportion of residents who are covered by private insurance. Additionally, the National Capital Area has the second highest level of HMO enrollment in the state. Southern Maryland has the third lowest per capita expenditures in Maryland. The percentage of this region's population that is enrolled in Medicaid and Medicare is below average, restraining per capita spending. Like the National Capital Area, private payers cover a significant portion of the population in Southern Maryland. Additionally, the percentage of older adults in this region is among the state's lowest, contributing to the below-average per capita expenditures.